Needs and Recommendations on Interoperability

Brian M. McKeon
Vice President, Command & Control/Battle Management,
Raytheon Command, Control, Communication & Information Systems

Introduction

- Interoperability Challenges

- Potential Improvements

- Summary

Interoperability Challenges

- Technical Challenges
  - Acquisition and procurement is of systems, not interoperability
  - Hardware dependence
  - Requirements subject to interpretation
  - Limited early interoperability validation
  - Interoperability testing tied to standards and practices not always fully captured
  - Coalition requirements limited
  - Standards changes often expensive to coordinate
  - Knowledge not fully leveraged across battlespace

Interoperability Challenges

- Cost
  - Programmatic Costs for Interoperability not consistent
  - Single program focused
  - Funding for Coalition Interoperability
- Schedule
  - Testing agency assets and schedules
  - Coupling between programs in current paradigm still an issue

Potential Solutions - Technical

Challenge

- Hardware dependence

Improvement

- Architectures that support isolation from hardware and enable spiral development
  - Java/Jini/CORBA
  - Software Radios

Potential Solutions - Technical (Cont)

Challenge

- Requirements subject to interpretation

- Limited early interoperability validation

Improvement

- Specification of requirements in more rigorous CASE tool formats
- More User Interaction

- Better tools, earlier in the lifecycle to support interoperability testing (e.g., Joint Synthetic Battlespace [JSB], Joint Distributed Engineering Plant[JDEP])
- Architectures that support spiral testing

Potential Solutions - Technical (Cont)

Challenge

- Interoperability testing tied to standards and practices not always fully captured

- Coalition requirements limited

Improvement

- Improved Test environments (e.g., JSB, JDEP) to accurately and adequately test avoiding a "blocking" phenomenon

- Requires meta-data approaches

- Must leverage US interoperability

- Significant MLS requirements

Potential Solutions - Technical (Cont)

Challenge

- Standards changes require significant coordination

- Knowledge not fully leveraged across battlespace

Improvement

- Interoperability Standards that use meta data and quality of service (QOS) paradigms

- Net Centric Warfare enabled by Global Information Grid to reduce ambiguity (e.g JCTN/SIAP) and provide improved CID
- QOS

Potential Solutions - Cost

Challenge

- Programmatic Costs for Interoperability not consistent and single program focused

- Funding for Coalition Interoperability

Improvement

- Develop interoperability cost guidelines and metrics and incorporate in source selections

- Establish coalition interoperability environments to reduce cost and then incorporate in program plans

Potential Solutions - Schedule (Cont)

Challenge

- Testing agency assets and schedules

- Coupling between programs in current paradigm still an issue

Improvement

- Leverage technical improvements to mitigate impact and decouple blocking

Summary

- Technical issues are being addressed and can overcome challenges

- Continued improvement in programmatic cost estimating is needed

- Technical advancements can reduce scheduling complexity and programmatic risk